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PATENT SPECIFICATION

Inventor: DANIEL JOSEPH PARMESAN.

677.685



Date of Application and filing Complete Specification: Aug. 15, 1950.

No. 20221/50.

Complete Specification Published: Aug. 20, 1952.

Index at acceptance:—Classes 99(i), G23b, G24e(2: 5); and 122(iii), B11b.

COMPLETE SPECIFICATION

Improvements in or relating to a Seal Ring or Gasket of Resilient Material for Use in a Pipe Coupling

SPECIFICATION NO. 677685

INVENTOR:— DANIEL JOSEPH PARMESAN

By a direction given under Section 17(1) of the Patents Act 1949 this application proceeded in the name of Chiksan Company, a Corporation organized and existing under the Laws of the State of California, United States of America, of 330, North Pomona Avenue, Brea, State of California, United States of America.

THE PATENT OFFICE,

26th September, 1952

DB 35778/1(12)/3299 150 9/52 R

15 may be quickly connected or disconnected with a novel type of seal for preventing leakage of the fluid through the union.

It is another object of the invention to provide a union of the character described whereby a fluid tight seal will be formed even though the connected sections may not be in perfect axial alignment.

A further object of the invention is to provide, in a union, a gasket, or seal ring, 25 formed of yieldable material and whose end faces which contact with the opposing end faces of the coupling members are provided with concentric spaced grooves forming annular ribs between the grooves 30 which improve the sealing effect of the gasket.

It is a further object of the invention to provide, in a union of the character described, novel type of gasket which 35 effectively breaks, or covers, the joint between the members, the gasket being of such formation that the fluid flowing through the line will not displace the gasket but the pressure of the fluid will tend to 40 hold the gasket more firmly seated in an internal annular seat provided to receive it.

According to the invention there is provided a seal ring or gasket of resilient material for use in a pipe coupling or similar 45 structure, said seal ring or gasket having

also having coarse external threads, a so clamp ring having an internal flange in contact with said shoulder and having inside threads in mesh with said external threads and of an internal diameter greater than the external diameter of said 65 shoulder, and an annular resilient seal ring or gasket as hereinbefore described.

In order that the invention may be fully understood it will now be described with reference to the accompanying drawings 70 in which:

Figure 1 is a side view of the union, partly in section;

Figure 2 is a plan view of the gasket, or seal ring, as viewed from one side; and 75

Figure 3 is a cross-sectional view of the gasket or seal-ring, taken on the line 3—3 of Figure 2, but showing the gasket in reversed position from that shown in Figure 2. 80

Referring now more particularly to the drawings wherein like numerals of reference designate the same parts in each of the figures, the numerals 1 and 2 designate, respectively, the coupling members of the 85 union whose outer ends are internally threaded for the connection sections of pipe thereto.

The inner end of the coupling member 1 is formed with an external annular shoulder 90

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Improvements in or relating to a Seal Ring or Gasket of Resilient Material for Use in a Pipe Coupling

We, WELL EQUIPMENT MFG. CORP., a corporation organised under the State of Texas, United States of America, of 2023, Semmes Street, Houston, Texas, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a pipe coupling union.

An object of the invention is to provide a union whereby sections of pipe or tubing may be quickly connected or disconnected with a novel type of seal for preventing leakage of the fluid through the union.

It is another object of the invention to provide a union of the character described whereby a fluid tight seal will be formed even though the connected sections may not be in perfect axial alignment.

A further object of the invention is to provide, in a union, a gasket, or seal ring, formed of yieldable material and whose end faces which contact with the opposing end faces of the coupling members are provided with concentric spaced grooves forming annular ribs between the grooves which improve the sealing effect of the gasket.

It is a further object of the invention to provide, in a union of the character described, novel type of gasket which effectively breaks, or covers, the joint between the members, the gasket being of such formation that the fluid flowing through the line will not displace the gasket but the pressure of the fluid will tend to hold the gasket more firmly seated in an internal annular seat provided to receive it.

According to the invention there is provided a seal ring or gasket of resilient material for use in a pipe coupling or similar structure, said seal ring or gasket having

ends converging outwardly and having an outer side tapering from one end to the other of the seal ring, the ends of the seal ring being formed with concentric annular grooves and with annular ribs defining the grooves and trapezoidal in cross-section.

The invention also includes a pipe coupling comprising coupling members in approximate alignment, one of said coupling members having an external annular shoulder and an outwardly curved annular face and the other member having an internal frusto-conical face which fits against said curved face, said other member also having coarse external threads, a clamp ring having an internal flange in contact with said shoulder and having inside threads in mesh with said external threads and of an internal diameter greater than the external diameter of said shoulder, and an annular resilient seal ring or gasket as hereinbefore described.

In order that the invention may be fully understood it will now be described with reference to the accompanying drawings in which:

Figure 1 is a side view of the union, partly in section;

Figure 2 is a plan view of the gasket, or seal ring, as viewed from one side; and

Figure 3 is a cross-sectional view of the gasket or seal-ring, taken on the line 3—3 of Figure 2, but showing the gasket in reversed position from that shown in Figure 2.

Referring now more particularly to the drawings wherein like numerals of reference designate the same parts in each of the figures, the numerals 1 and 2 designate, respectively, the coupling members of the union whose outer ends are internally threaded for the connection sections of pipe thereto.

The inner end of the coupling member 1 is formed with an external annular shoulder

3 and, beyond said shoulder toward the inner end of said coupling member the coupling member has an external annular bearing surface 4 which is curved toward the inner end of said member all the way around, as clearly shown in Figure 1. The abutting end of the coupling member 2 is outwardly thickened and formed with coarse external threads 5 and has an inside outwardly flared plane annular face 6 which has a line contact all the way around the union with the curved face 4 so as to form a metal to metal joint when said coupling members are assembled.

There is a clamp nut 7 having coarse internal threads 8 adapted to intermesh with the threads 5 and also having an internal annular flange 9 which fits closely over the section 1 and which is engageable with the shoulder 3, when the threads are screwed home, to clamp the facing ends of the coupling members in abutting relation.

The inside diameter of the threads 8 is slightly larger than the outside diameter of the shoulder 3 so that the clamp nut 7 may be fitted over the coupling member 1 and the threads 8 screwed onto the threads 5.

The inner end of the coupling member 2 has an inside countersunk portion presenting a wall 10 which is approximately parallel with the opposing end of the coupling member 1 and also presenting an outer wall 11 which tapers, or converges, toward the inner end of the coupling member 2 at approximately a ten degree angle to the axis of the union. An annular inside groove is thus formed to receive a gasket which is designated generally by the numeral 12.

This gasket is formed of yieldable material such as neoprene or other similar material. Its outer face 13 is tapered, relative to the axis, so as to fit closely against the wall 11 of said groove. The end faces 14 and 15 converge outwardly, with respect to the axis of the gasket.

These faces 14 and 15 are provided with annular grooves thus forming annular ribs 16 and 17 which are concentric and which are, preferably, trapezoidal in cross-section, but may be of any selected shape.

It will be noted that the outer ribs 16a, 17a and the inner ribs 16b, 17b are slightly wider than the ribs between them, as is clearly shown in Figure 3. This construction has been found, in practice, to give a better sealing effect and in case a hard particle of sand or gravel or other hard substance finds its way between the ribbed face of the seal ring and the opposing end face of a coupling member only the rib in contact with such foreign substance will be distorted and the other ribs of the gasket, or seal ring, will still perform

their normal sealing effect so that leakage will thereby be prevented.

Preferably, the inner side of the gasket is concaved from one end face to the other thus providing annular end ribs 18, 19 which extend inwardly. The inner side of the gasket is somewhat wider than the width of the groove in which it is designed to fit so that when the coupling member 1 is fitted into position against the facing end of the coupling member 2 and the clamp nut 7 is screwed home the gasket will conform its shape to the shape of said groove, as shown in Figure 1, and will be held in said groove under compression with the lip portions fitting tightly against the opposing sides of the groove.

The fluid flowing under pressure through the line will therefore tend to press the gasket more securely in place and will tend to spread the lips into close sealing relationship with the opposing sides of the groove. If the gasket were made to fit the groove and were not held therein under compression the fluid flowing through the line would unseat the gasket and displace it from the groove. Furthermore any gritty substances or hard particles that may find their way between the end faces of the gasket and the opposing sides of the groove will distort only the ribs in contact therewith leaving the other ribs free to seal against the opposing ends of the coupling members.

What we claim is:—

1. A seal ring or gasket of resilient material for use in a pipe coupling or similar structure, said seal ring or gasket having ends converging outwardly and having an outer side tapering from one end to the other of the seal ring, the ends of the seal ring being formed with concentric annular grooves and with annular ribs defining the grooves and trapezoidal in cross-section.

2. A seal ring or gasket according to claim 1 having inwardly directed annular lips at its ends.

3. A seal ring or gasket according to claim 1 or 2, wherein the outer and inner ribs on said ends are wider than the intermediate ribs.

4. A pipe coupling comprising coupling members in approximate alignment, one of said coupling members having an external annular shoulder and an outwardly curved annular face and the other member having an internal frusto-conical face which fits against said curved face, said other member also having coarse external threads, a clamp ring having an internal flange in contact with said shoulder and having inside threads in mesh with said external threads and of an internal diameter greater than the external diameter of said shoulder, and an annular resilient seal ring

or gasket as claimed in any of claims 1 to 3.

5. A seal ring or gasket constructed substantially as described and shown in the accompanying drawings.

5 6. A pipe coupling constructed and arranged substantially as described and shown in the accompanying drawings.

For : WELL EQUIPMENT MFG. CORP.,
Stevens, Langner, Parry & Rollinson,
Chartered Patent Agents,
5/9, Quality Court, Chancery Lane,
London, W.C.2,
and at
120, East 41st Street, New York, 17,
New York, U.S.A.

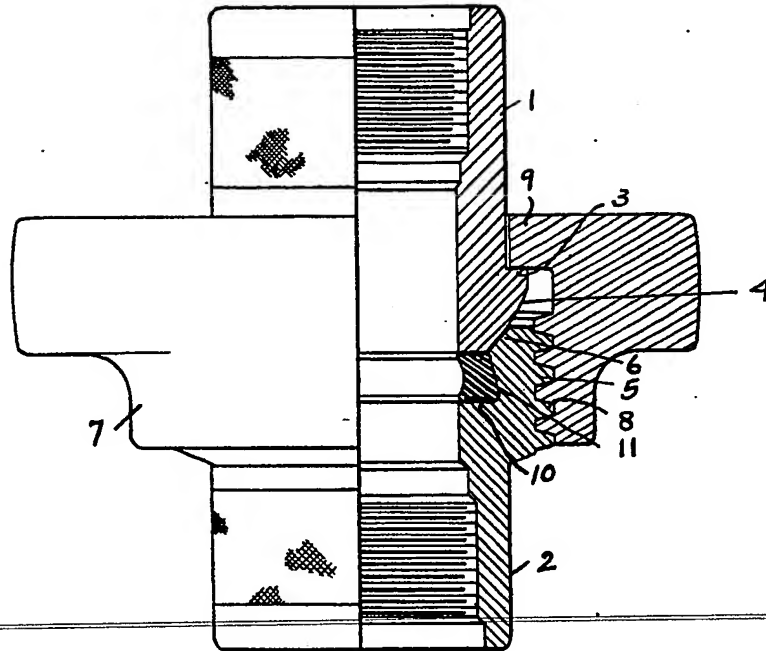


FIG. 1

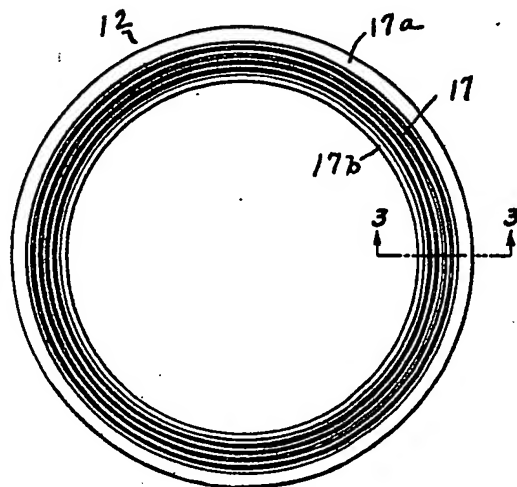


FIG. 2

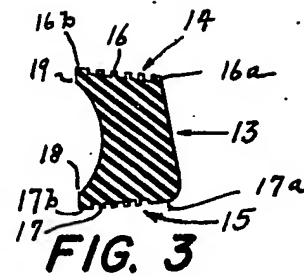


FIG. 3